SHENZHEN CHAINWAY INFORMATION TECHNOLOGY CO., LTD

Fixed UHF Reader

UR4 User Manual



Statement

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Chapter 1 Product Intro

1.1 Intro

Chainway UR4 is a high-performance four-channel fixed UHF reader. The core chip adopts Impinj R2000 module with high integration and excellent performance. With Stable and reliable capacity, excellent anti-electromagnetic interference capability and heat dissipation performance, it meets the requirements for installation and application of various indoor and outdoor environments and can be applied in multiple industries with strict RFID application standard such as warehouse management, archives and library management, bank, clothing and footwear retail, jewelry monitoring, watch industry, laundry, production line management, medical instrument cabinet and vending machines.

1.2 Brief

UR4 has adopted DC 12V/5A power supply, it can be equipped with multiple types of antennas with different output power such as 6dBi, 9dBi and 12dBi. Also UR4 has adopted SMA female port, RS232 and RJ45 interfaces, Windows SDK and demo are provided.

1.3 Device List

- 1. UR4 fixed reader, 12V/5A power adaptor.
- 2. UHF antennas: 6dBi, 9dBi, 12dBi etc.
- 3. Feeder line that has adopted with SMA male port, the port on other side needs to be equipped with antenna.
- 4. RJ45 Ethernet cable.
- 5. Serial port cable.
- 6. Demo software, it includes 4 necessary files and UHFAPP.exe is execute program as pic. 1.

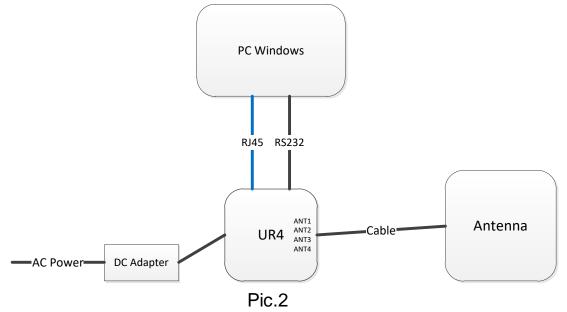
Name	*	Compressed	Original	Туре	Modified	
Jan 1997 - 1997						
ipConfig.txt		28	28	Text Document	8/2/2018 11:24:19 AM	
🚳 UHFAPI.dli		55,281	208,896	Application extension	11/8/2018 3:15:05 PM	
🖭 UHFAPP.exe 🔶		56,234	201,216	Application	11/14/2018 5:59:32 PM	
NindowsFormsControlLibrary1.dll		3,713	9,216	Application extension	7/20/2018 10:11:22 AM	
	— • ·					

Pic.1

1.4 Device installation

UR4 can be connected as Pic.2. PC can connect with device by serial port cable (communication velocity is 115200bps). Also it can be connected by Ethernet cable through RJ45 port. (Default IP address of UR4 is 192.168.99.202, Port is 8888).

PC needs to be set with UR4 in same network segment and PC could connect with multiple UR4 devices through switchboard or similar. One UR4 can be connected with 4 antennas at maximum.



1.5 GPIO

1	2	3	4	5	6	7	8
NC	NC	output: Relay pin 1	output: Relay pin 2	input: Optically coupled 1 LED+	input: Optically coupled 1 LED-	input: Optically coupled 2 LED+	input: Optically coupled 2 LED-

UR4 contains a GPIO interface, which is defined as follows:

1、IO1-2: NC, unable to connect to any electrical level;

- IO3-4: Controllable by software, maximum switching voltage of electric relay is 220Vdc, 250Vac;
- IO5: Optically coupled 1 input LED+, voltage range between IO5 and IO6 is 3-5.5V, maximum current is 50mA;
- 4、IO6: Optically coupled 1 input LED-, voltage range between IO5 and IO6 is 3-5.5V, maximum current is 50mA;
- 5、IO7: Optically coupled 2 input LED+, voltage range between IO7 and IO8 is 3-5.5V, maximum current is 50mA;
- IO8: Optically coupled 2 input LED-, voltage range between IO7 and IO8 is 3-5.5V, maximum current is 50mA;

Chapter 2 Installation instructions

2.1 Appearance



2.2 Parameter Setup

Double click UHFAPP.exe to enter software, and connect with device through serial port line. Select **Mode** to "SerialPort", select COM to according serial port on PC. Click "Open" to connect with device, initiation page is as follows:

🖳 UHF(1.2.4) - [ConfigForm]					
ReadEPC	ReadWriteTag	Configuration K	ill-Lock	UHF Info	Temperature	UDP-ReceiveEPC
Mode Seri	alPort 🗸	СОМ	COM1	÷	Open	

If RJ45 has been used as connection, communication **Mode** needs to be selected as "network" and input IP address and port number (default IP address is 192.168.99.202, Port is 8888.) Then click "Open" to connect PC and device. After PC and device have been connected, the status page is as follows:

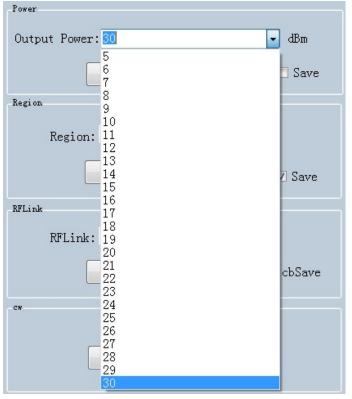
	UHF(:	1.2.4)	- [ReadEPC]												
	ReadE	РС	ReadWriteTag		Configuratio	on	Kill	-Lock	U	HF Info	5	Tempe	erature	UDP-Rece	iveEPC
1	Mode	netw	ork	Ŧ	IP	19	2.	168].	99].	202	Port	8888	Open

🖳 UHF(1.2.4) - [ConfigForm]		
ReadEPC ReadWriteTag Configuration Kill-Lock UHF Info	Temperature UDP-ReceiveEPC	
Mode network • IP 192 . 168 . 1 . 201	Port 88888 Close 语言 English -	
Power	Gen2	FastID
Output Power: 30 - dBm	Target: 000(s0) - startQ: 4 -	○ Enable ● Disable
Get Set Save	Action: 000 - minQ: 0 -	Get Set
Region	Truncate: O(Disable) • maxQ: 15 •	
Region: USA 🗸	Q: 1(Dynamic) • DR: 1(DR=64/3) •	© Enable © Disable Get Set
Get Set V Save	Miller: 10(M=4) • Session: 01(S1) • TRext: 1(Use pilot •	
RFLink RFLink: PR_ASK/Miller4.250KHz -	Target: 0(A)	Value 15 50-15
R#Link: FR_ASA/MITTEF4. 250Anz	Set Get	
	ANT	EPC And Tid
		O Enable O Disable
ON OFF	VANTI ANTZ ANT3 ANT4 ANT5 ANT6 ANT7 ANT ANT9 ANT10 ANT11 ANT12 ANT13 ANT14 ANT15 ANT	
Local IP	get Set Save	Reset
IP: 192.168.1.201	ANT: ANT1 - workTime: 200 10-65535ms	Buzzer=
Port: 8888	get Save	• Open O Close
<	рс. Ш	
		ii.

After device has connected with PC, the parameters on interface will be empty. Click "Get" on each option to collect device parameters.

Click "Set" on the page, user can adjust necessary parameters, some parameters are default values.

Output power can be set in range of 5 dBm to 30 dBm as following picture, after select value, click "Set" button. If "Save" has been selected, current parameters will be saved after power off device.



Set regions:



Set RFLink:

RFLink			
RFLink:	PR_ASK/Miller4.250KHz	-	
	DSB_ASK/FM0/40KHz		ř.
	PR_ASK/Miller4.250KHz		cbSave
	PR_ASK/Miller4/300KHz DSB_ASK/FM0/400KHz		

Set continuous wave:

cw			
	ON	OFF	

There are two work modes can be selected, "command mode" and "auto mode".

Under "command mode", user could collect tag data in "Read EPC" page, click "Start" to send command to device on PC, click "Stop" to stop collecting tag data.

Under "auto mode", user could collect tag data in "UDP-ReceiveEPC" page, click "Start" to receive data, click "Stop" to stop receiving data. After selecting "auto mode", the device needs to be restarted.

Mode:	command mode
	command mode
	auto mode

Set IP address and make sure PC and device have used in same segment. For example, if IP address of PC is 192.168.1.109, mask is 255.255.255.0, the device IP address can be set to 192.168.1.201, port number doesn't need to be changed.

Local IP	
IP:	192 . 168 . 1 . 201
Port:	8888
_	
	get set

Set antenna connection, there are 4 I/O ports on device and have been marked as ANT1, ANT2, ANT3, ANT4. User needs to select antenna which has been connected and click "set".

ANT1	ANT2	NT3 🔲 ANT4	ANT5 ANT6	ANT7 ANT8
ANT9	ANT10	NT11 🔽 ANT12	🗖 ANT13 📃 ANT14	ANT15 ANT16
	get] [set	C Save
ANT : I	ANT1 -	workTime:	200	10-65535ms
	get] [set	Save

Set destination IP address and port number, destination IP address is the IP address which used for reading tag data under "auto mode".

IP:	192	•	168	•	1		109
Port:	9999						
	get				5	set	

Set FastID:

FastID	
🔘 Enable	Isable
Get	Set

Set TagFocus:

Tagfocus		
🔘 Enable	Oisable	
Get	Set	

Set protective temp. It means to setup highest operating temperature of UHF module:

Temperature	Protect		
value	75		50-75
	get	set	

Set EPC and TID:

EPC And Tid	
🛇 Enable	• Disable
Get	Set 🗌 Save

Reset, click "Reset" button to restore device to default value. After reset, user needs to click "Close" and "Open" to reconnect the device.

Reset	

Set Buzzer, click "Open" to switch on buzzer function, device will play notification sound when reading tags.

• Open	⊙ Close	
get	set	

Set Gen2, this parameter needs to be adjusted by actual requirements.

Gen2					
Target:	000(s0)	Ŧ	startQ:	4	•
Action:	000	•	minQ:	0	•
Truncate:	O(Disable)	•	maxQ:	15	•
Q:	1(Dynamic)	•	DR:	1(DR=64/3)	•
Miller:	10(M=4)	•			
			Session:	01(S1)	· •
TRext:	1(Use pilot	•			
			Target:	0(A)	•
sel:	01(ALL)	•		011(250KHz)	.
		1	linkFrequency:		
	Set		Get		

Chapter 3 Read and Write EPC

3.1 Read EPC

Click "ReadEPC" in menu to enter EPC page, click "Start" to read tags, click "Stop" to stop reading. The EPC, RSSI, Count number and ANT number (antenna channel) will be recorded in window as following pic:

UHF(1.	2.4) - [Read	EPC]	-																		
		/riteTag	1.74					mperature													
Mode	etwork	*	IP	192	. 168 .	1.2	:01	Port 88	388	Close	语	盲 English	i	7							
Filter																	bank				
Data:										*	0	Ptr:	32	(bit) ngt	h: 16	(hit)		O TID	O User	Save	Set
										-							0.000		0 0004	Jerbaro	reset
ID	EPC													TID					Rssi	Count	ANT
1		019731	0027914	1908303										110					-67	3	1
2			F012223																-75	2	1
3	16013																		-73	3	1
4			3444455	5556666															-68	6	1
5	16013																		-72	3	1
6	E2005	5157881	8019010	090AB56															-55	3	1
7	16013	3545																	-66	3	1
8	11112	2222																	-71	4	1
9	3005F	B63AC1	F3681E0	2880468															-63	3	1
10	16013	8555																	-66	3	1
11	67880	017780	5005416	5101111															-78	2	1
12	11112	2222111	1222222	2223333															-74	5	1
13	16013																		-69	3 2 5 3 2	1
14	97201	800000	0761200	0000503															-80	2	1
			Tot	al:	14		_								_						
								C1	ear				Sta	rt							
			Тіл		4(s)			01	cal				ota	11 U							
			110		1 (0)																

User could enter data in "Filter" to filter EPC of special tags, the maximum filter DL is 96 bits. User needs to setup data, initial address, data length and click "Set". After filtered data has been set, the device will read and search for the tag which has been filtered.

For example: enter 16 01 in "Data", initial address data length is 32(bit), length is 16(bit), select EPC in "bank", click "Set" and click "Start" to start scanning tags which the address start at 16 01:

💀 UHF	1.2.4) - [ReadEPC]																
Read	PC ReadWriteTag	Configuration	Kill-Lock	UHF Info	Femperature	UDP-F	ReceiveEPC										
Mode	network -	IP 192	. 168 .	1 . 201	Port 8	888	Close	语言	English		•						
Filter													bank				
Data	16 01						÷ 2		Ptr:	32	(bit) ngth: 16	(bit)		O TID	O User	Save	Set
																	reset
ID	EPC										TID				Rssi	Count	ANT
1	16013555										110				-45	158	
2	16013545														-52	156	1 1 1 1
3	16013530														-44	160	1
4	16013533														-59	110	1
5	16013574														-71	63	1
-																	
		Total:	5														
			-		C	lear				Star	rt						
		Time:	9(s)														
-																	

3.2 Read & Write Tags

Click "ReadWriteTag" to enter its page, TID area can be read only, RESERVED, EPC and USER areas can be read and written.

• UHF(1.2.4) - [Rea	dWriteTagForm]					
ReadEPC Read	WriteTag Configuration Kill-Lock UHF Info 1	emperature UDP-ReceiveEPC				
Mode network	• IP 192.168.1.201	Port 8888 Close	语言 English	2		
filter			bank			
Data:	32 00 51 57 88 18 01 90 10 90 AB 56	12		ID O User Ptr: 32	(bit) Length: 96	(bit)
Read-write			BlockWrite			
Bank:	EPC -		Bank:	EPC	*	
Prt:	2		Prt:	2		
Length:	6	(word)	Length:	6	(word)	
Access Pwd:	0000000		Access Pwd	: 00000000		
Data:	E2 00 51 57 88 18 01 90 10 90 AB 56	12	Data:			0
	Read Write			Erase	Write	
Set QT						
QT:	Not reduces range - private Memory :	map 🔻				
	Get					

filter		
Data:	82 00 51 57 88 18 01 90 10 90 AB 56	12
Read-write		
Bank: Prt: Length: Access Pwd:	EFC RESERVED FPC TID USER 00000000 (word)	
Data:		0
	Read	

Click one option in "Read-write" window to enter tag reading mode, EPC will be automatically copied into "Data" block in filter, default option is EPC reading, click "Read" to read 12 bytes of EPC area.

Data:	E2 00 51 57 88 18 01 90 10 90 AB 56	12
Read-write		
Bank:	EPC -	
Prt:	2	
Length:	6	(word)
Access Pwd	0000000	
Data:	E2 00 51 57 88 18 01 90 10 90 AB 56	12
	Read Write	

For "RESERVED" area, user could read 4 words at maximum, previous 2 words are password of KILL function, last 2 words are access passwords:

filter		
Data:	E2 00 51 57 88 18 01 90 10 90 AB 56	12
Read-write		
Bank:	RESERVED -	
Prt:	0	
Length:	4	(word)
Access Pwd	: 00000000	
Data:	20 18 20 18 20 18 20 18	8
	Read	

Read TID area:

Data:	E2 00 51 57 88 18 01 90 10 90 AB 56	× v	12
Read-write			
Bank:	TID -		
Prt:	0		
Length:	6	(word)	
Access Pwd:	0000000		
Data:	E2 00 34 12 01 3C FA 00 09 AC AB 56	12	
	Read		

Read USER area:

filter			
Data:	E2 00 51 57 88 18 01 90 10 90 AB 56		12
Read-write			
Bank:	USER -		
Prt:	0		
Length:	4	(word)	
Access Pwd:	0000000		
Data:	12 34 12 34 12 34 12 34	*	8
		-	
	Read		

Data could be written in EPC, RESERVED and USER areas, select according areas and input initial address, length, input data into "Data" window and click "Write" to write data into according areas.

3.3 Lock UHF Tag

Click "Kill-Lock" in main menu to enter Tag locking function. For this function, user could execute "Lock", "Kill", "Open", "Permanent Open" and "Permanent Lock", to execute "Lock" function, password is needed. If user wants to kill UHF tag, need to enter password and tag will be wasted permanently.

BUHF(1.2.4) - [Kill_LockForm]	×
ReadEPC ReadWriteTag Configuration Kill-Lock UHF Info Temperature UDP-ReceiveEPC	
Mode network • IP 192, 168, 1 , 201 Port 8888 Close in the fight •	
filter	
Data: E2 00 51 57 88 18 01 90 10 90 AB 56 12 bank © EPC O TID User Ptr: 32 (bit) Length: 96	(bit)
lock Blockermalock	
Access Pwd: 20 18 20 18 Can't use the default password Bank: USER -	
Open OLock OPermanent Open OPermanent Lock Ptr:	
Access-pwd: 0000000	
○Kill-pwd ○Access-pwd ○EPC ○TID ● USER ReadLock: Read ✓	
Lockbats:00 08 00 Confirm	block-7 📄 block-8
Kill block=10 block=11 block=12 block=14 block=14	block-15 block-16
Access Pwd: 20 18 20 18 Can't use the default password Maskbuf: Confirm kill	
E2 00 51 57 88 18 01 90 10 90 AB 56 12	
lock	
Access Pwd: 20 18 20 18 Can't use the default password	
© Open ○ Lock ○ Permanent Open ○ Permanent Lock	
○ Kill-pwd ○ Access-pwd ○ EPC ○ TID ● USER	
LockData:00 08 00 Confirm	
Kill	
Access Pwd: 20 18 20 18 Can't use the default password	
kill	

3.4 UDP-ReceiveEPC

After auto mode has been selected, restart device and select UDP-ReceiveEPC, click "Open" to connect device and select IP address of PC in address column, click "Stop" to stop receiving UHF tag data.

If user needs to escape auto work mode, "command mode" needs to be selected in work mode.

	and the second second second		- • • ×
ReadEPC ReadWriteTag Configuration Kill-Loc	k UHF Info Temperature UDP-ReceiveEPC		
Mode network TP 192 . 168	1. 201 Port 8888 Close 语言 English		
IP: 192.168.1.109 • Pc	rt: 9999	远程IP: 192.168.1.201	
ID EPC 1 11112222111122222223333 2 11112222 3 B2005157881801901090AB56 4 3005FB63AC1F3681EC880468 5 16013555 7 16013533 8 16013554 9 16013574 10 678800177805005416101111		TID Rssi Count -72 22 -77 79 -67 44 -65 74 -46 135 -46 134 -47 135 -36 135 -51 133 -71 1	ANT 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
Total: Time:	10 Stop 48(s)	Clear	

3.5 Others

Click "UHF information" in main menu to read hardware version and firmware version, click "Temperature" to read current temperature value of UHF module.